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L1: Entry 2 of 7

File: USPT

Feb 3, 1998

US-PAT-NO: 5714168

DOCUMENT-IDENTIFIER: US 5714168 A

TITLE: Method for increasing flowability of spray dried vitamin powders having low vitamin concentrations

DATE-ISSUED: February 3, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Stroh; Friedemann H.	Southgate	MI		
Lisa; Rudolph E.	Gross Ile	MI		

US-CL-CURRENT: 424/490; 424/458, 424/461, 424/479, 424/493

CLAIMS:

We claim:

1. A process for improving the flowability of spray dried vitamin powders wherein said vitamin powders are comprised of maltodextrin or maltodextrin and sugar carriers, optionally thickeners and densifiers, and low concentrations of vitamins, comprising the steps of:

(a) dissolving said maltodextrin or maltodextrin and sugar carriers and other optional ingredients in an aqueous environment to form a suspension;

(b) adding said low concentrations of vitamins to the suspension formed in step (a);

(c) spray drying said suspension formed in step (b)

(d) coating said spray dried suspension formed in step (c) with hydrophobic silica.

2. A process according to claim 1, wherein said flowability is in the range of 100 to 250.

3. A process according to claim 2, wherein said vitamin is biotin.

4. A process according to claim 3, wherein said low vitamin concentration is 0.1-2%.

5. A process according to claim 4, wherein said maltodextrin is at a level of 96-99.9%.

6. A process according to claim 5, wherein said hydrophobic silica is at a level of 0.5-1%.

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☐ 1. Document ID: US 6303167 B1

Using default format because multiple data bases are involved.

L1: Entry 1 of 7

File: USPT

Oct 16, 2001

US-PAT-NO: 6303167

DOCUMENT-IDENTIFIER: US 6303167 B1

TITLE: Method of producing vitamin powders

DATE-ISSUED: October 16, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Morris; Charles A.	Overland Park	KS		
Calhoon, Jr.; Francis W.	Olathe	KS		
Willis; Huey L.	Raymore	MO		

US-CL-CURRENT: [426/443](#); [424/442](#), [424/489](#), [426/442](#), [426/96](#), [514/458](#)

Full	Title	Citation	Front	Review	Classification	Data	Reference	Claims	R00C	Draw D.
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☐ 2. Document ID: US 5714168 A

L1: Entry 2 of 7

File: USPT

Feb 3, 1998

US-PAT-NO: 5714168

DOCUMENT-IDENTIFIER: US 5714168 A

TITLE: Method for increasing flowability of spray dried vitamin powders having low vitamin concentrations

DATE-ISSUED: February 3, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Stroh; Friedemann H.	Southgate	MI		
Lisa; Rudolph E.	Gross Ile	MI		

US-CL-CURRENT: [424/490](#); [424/458](#), [424/461](#), [424/479](#), [424/493](#)

Full	Title	Citation	Front	Review	Classification	Data	Reference	Claims	R00C	Draw D.
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☐ 3. Document ID: US 4486435 A

L1: Entry 3 of 7

File: USPT

Dec 4, 1984

US-PAT-NO: 4486435

DOCUMENT-IDENTIFIER: US 4486435 A

TITLE: Spray-dried vitamin powders using hydrophobic silica

DATE-ISSUED: December 4, 1984

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schmidt; Douglass N.	Grosse Ile	MI		
Finnan; Jeffrey L.	Southgate	MI		
Lisa; Rudolph E.	Grosse Ile	MI		

US-CL-CURRENT: 514/251, 514/167, 514/276, 514/345, 514/458, 514/474, 514/52,
514/725, 514/769, 514/770, 514/778

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Draw D-
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☐ 4. Document ID: EP 1133279 B1, WO 200027362 A1, AU 200017159 A, EP 1133279 A1, US 6303167 B1, US 20020001622 A1, CN 1332627 A, MX 2001004607 A1, JP 2002529395 W, ZA 200103760 A, NZ 511549 A, AU 769187 B, MX 219745 B

L1: Entry 4 of 7

File: DWPI

Oct 5, 2005

DERWENT-ACC-NO: 2000-376272

DERWENT-WEEK: 200569

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TITLE: Production of dry free-flowing vitamin powder comprises blending redried cornstarch, silica and vitamin, used to promote health

INVENTOR: CALHOON, F W; MORRIS, C A ; WILLIS, H L

PRIORITY-DATA: 1998US-0188166 (November 9, 1998), 2001US-0933709 (August 22, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>EP 1133279 B1</u>	October 5, 2005	E	000	A61K009/14
<u>WO 200027362 A1</u>	May 18, 2000	E	013	A61K009/14
<u>AU 200017159 A</u>	May 29, 2000		000	
<u>EP 1133279 A1</u>	September 19, 2001	E	000	A61K009/14
<u>US 6303167 B1</u>	October 16, 2001		000	A61K009/14
<u>US 20020001622 A1</u>	January 3, 2002		000	A61K009/14
<u>CN 1332627 A</u>	January 23, 2002		000	A61K009/14
<u>MX 2001004607 A1</u>	July 1, 2001		000	A61K009/14
<u>JP 2002529395 W</u>	September 10, 2002		018	A61K031/355

<u>ZA 200103760 A</u>	October 30, 2002	029	A61K000/00
<u>NZ 511549 A</u>	August 29, 2003	000	A61K009/14
<u>AU 769187 B</u>	January 22, 2004	000	A61K009/14
<u>MX 219745 B</u>	April 6, 2004	000	A61K009/14

INT-CL (IPC): A61 K 0/00; A61 K 9/14; A61 K 9/50; A61 K 31/355; A61 K 31/375; A61 K 31/4188; A61 K 31/4415; A61 K 31/506; A61 K 31/519; A61 K 31/59; A61 K 31/7004; A61 K 31/7056; A61 K 47/04; A61 K 47/36; A61 P 3/02

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Draw D.
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☐ 5. Document ID: US 5714168 A

L1: Entry 5 of 7

File: DWPI

Feb 3, 1998

DERWENT-ACC-NO: 1998-129809

DERWENT-WEEK: 199808

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TITLE: Process for improving flowability of spray dried vitamin powders - by dissolving ingredients to form aqueous suspension, spray drying and coating with hydrophobic silica

INVENTOR: LISA, R E; STROH, F H

PRIORITY-DATA: 1996US-0733231 (December 11, 1996)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>US 5714168 A</u>	February 3, 1998		003	A61K009/16

INT-CL (IPC): A61 K 9/16

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Draw D.
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☐ 6. Document ID: JP 02016936 A, JP 2631705 B2

L1: Entry 6 of 7

File: DWPI

Jan 19, 1990

DERWENT-ACC-NO: 1990-063590

DERWENT-WEEK: 199733

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TITLE: Blended feed in pellet form for domestic animals - obtd. by kneading vitamin powder, plant pieces and various brans, with zeolite or silica, etc.

PRIORITY-DATA: 1988JP-0167086 (July 5, 1988)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>JP 02016936 A</u>	January 19, 1990		004	
<u>JP 2631705 B2</u>	July 16, 1997		003	A23K001/20

INT-CL (IPC): A23K 1/175; A23K 1/20

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	INDEX	Drawings
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☐ 7. Document ID: US 4486435 A, CA 1213829 A

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File: DWPI

Dec 4, 1984

DERWENT-ACC-NO: 1984-318398

DERWENT-WEEK: 198451

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TITLE: Prepn. of spray-dried vitamin powders - includes adding hydrophobic silica while spraying powder into chamber

INVENTOR: FINNAN, J L; LISA, R E ; SCHMIDT, D N

PRIORITY-DATA: 1983US-0494990 (May 16, 1983)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 4486435 A	December 4, 1984		005	
CA 1213829 A	November 12, 1986		000	

INT-CL (IPC): A61K 9/14; A61K 31/52; A61K 47/00

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	INDEX	Drawings
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